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18. (New) The device according to Claim 1, wherein detectors are arranged to be in one of four quadrants, the quadrants arranged counterclockwise being a, b, c and d, each quadrant having a detector in an outer portion 1 and another detector in an inner portion 2, a second time difference signal being proportional to

$$(t_{a1} + t_{d1}) + (t_{a2} + t_{d2}) - (t_{b2} + t_{c2}) - (t_{b1} + t_{c1}),$$

each of t_{a1} , t_{a2} , t_{b1} , t_{b2} , t_{c1} , t_{c2} , t_{d1} and t_{d2} being a time difference between the detector signal of a respective detector and a corresponding clock signal, the respective detector being arranged in the quadrant portion indicated by subscript.

Remarks

Favorable reconsideration of this application is requested in view of the following remarks. For the reasons set forth below, Applicant respectfully submits that the claimed invention is allowable over the cited references.

The Office Action mailed June 20, 2002, indicated that the specification is objected to for not providing appropriate section headings, and for a typographical error on page 5; claims 2, 3 and 8 are objected to under 37 CFR § 1.75(d)(1) as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention including antecedent and grammatical errors, inconsistent and undefined variables; claims 1, 6-7 and 9-10 stand rejected under § 102(b) as being anticipated by *Nakamura et al.* (U.S. Pat. No. 4,952,787); claims 2-3 and 8 stand rejected under § 103(a) as being unpatentable over the '787 reference in view of *Hoshi et al.* (U.S. Pat. No. 4,733,065); and claims 4-5 stand rejected under § 103(a) as being unpatentable over '787 reference in view of *Kuramochi et al.* (U.S. Pat. No. 5,008,552).

The specification has been amended to include section headings, and to correct the typographical error on page 5, line 25, as requested by the Examiner. Applicant respectfully requests that the objections to the specification be withdrawn.

With respect to the claim objections, claims 2 and 3 have been amended, deleting unnecessary references to tangential coma and spherical aberration respectively. With respect to claim 8, Applicant respectfully submits that each of the time variables were previously defined in a sufficient manner via a conventional use of subscript notation, the

claim including a key for said subscript notation; however, claim 8 was amended for the Examiner's convenience to clarify the time variable naming convention. Therefore, Applicant requests that the objections to the claims be withdrawn.

Applicant respectfully traverses each of the § 102(b) and § 103(a) rejections.

With respect to the § 102(b) rejection, Applicant respectfully submits that the rejection is improper as the cited portions of the '787 reference fail to teach or disclose all aspects of the claimed invention. More particularly, Applicant fails to see how the '787 reference discloses, *inter alia*, the alleged "objective system (40)," when reference number 40 refers to a switching signal (col. 9, lines 13-16). In addition, Applicant fails to see how the cited portion of the '787 reference teaches "an electronic circuit . . . for generating a time difference signal representing a wavefront aberration, specifically focus error" as further alleged in the Office Action. The Office Action appears to incorrectly classify a time difference signal representing a focus error as a time difference signal representing a wavefront aberration. Because the cited portions of the reference does not identically teach each and every claimed limitation, a *prima facie* case of anticipation is not established, and the rejection should be removed.

More particularly with respect to independent claims 1 and 9, and claims depending therefrom, the specification of the present invention defines focus error as "the axial distance between focus spot 36 and information layer 23" (*see* p. 6, line 17; Figs. 1A, 1B and 2). The principle of wavefront aberration is discussed from p. 3, line 26 – p. 4, line 5. Figs. 1A and 1B illustrate an unaberrated wavefront, as well as several types of aberrated wavefronts. From the discussion and figures, it will be appreciated that a radiation beam having an unaberrated wavefront may be improperly focused (i.e., a distance occurring between a focus spot and the information layer) and have a focus error. Conversely, a radiation beam having an aberrated wavefront may be properly focused and have no focus error. Therefore, a time difference signal representing a wavefront aberration is not identically taught by a disclosure of a time difference signal representing a focus error. The Office Action failed to establish a *prima facie* case of anticipation, and Applicant requests that the rejection be removed.

Clearly the '787 reference does not explicitly teach a time difference signal representing a wavefront aberration. To the extent that the Examiner is making an

inherency argument – that a time difference signal representing a wavefront aberration is inherent in a time difference signal representing a focus error, first, there is no evidence of wavefront aberration in the ‘787 reference asserted by the Examiner. Only Applicant’s disclosure seems to address wavefront aberration. Second, to establish inherency, the extrinsic evidence “must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991) (emphasis added). “Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient” (emphasis added). *Id* at 1269, 20 USPQ2d at 1749 (quoting *In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323, 326 (C.C.P.A. 1981)). In this instance, the Examiner only alleges that a time difference signal representing “focus error” is disclosed by the ‘787 reference, which is insufficient as a matter of law to support the claimed limitation of a signal representing a wavefront aberration of the radiation beam. Therefore, the Examiner has failed to establish a *prima facie* case of anticipation, even by inherency, and Applicant requests that the § 102(b) rejection be removed.

More particularly with respect to independent claim 7, Applicant fails to see how the cited portions of the ‘787 reference teach “the detection system comprises eight detectors arranged in four quadrants, each quadrant being split at a radius in an inner part and an outer part.” Because the cited portions of the ‘787 reference do not identically teach each and every claimed limitation, a *prima facie* case of anticipation is not established, and the rejection should be removed.

With respect to the § 103(a) rejection of claims 2-3 and 8, Applicant respectfully submits that the rejection is improper because the cited references (the ‘787 reference in view of the ‘065 reference) fail to establish a *prima facie* case of obviousness. A *prima facie* case of obviousness requires a complete correspondence between the asserted prior art and the claimed invention. The cited references do not show all aspects claimed. Specifically, Applicant fails to see among the cited reference portions, *inter alia*, a teaching or suggestion of features completely corresponding to the claimed limitations of the signal being proportional to a time difference (claims 2-3 and 8), and “generating

from the time difference, a signal representing a wavefront aberration of the radiation beam” (emphasis added) (claims 2-3). As acknowledged by the Examiner in the rejection, the cited portions of the ‘065 reference utilize intensity measurement and computations rather than the claims time measurements and computations. Additionally, as set forth above with respect to the § 102(b) rejection, the ‘787 reference fails to teach various claimed features relied upon also in the § 103(a) rejection. Furthermore, no motivation is suggested for making the asserted combination of references. Therefore, because the combination of references do not teach all of the claimed limitations, and there is no motivation for making the asserted combination of references, the Examiner has failed to establish a *prima facie* case of obviousness, and Applicant requests that the § 103(a) rejection of claims 2-3 and 8 be removed.

With respect to the § 103(a) rejection of claims 4-5, Applicant respectfully submits that the rejection is improper because the cited references (the ‘787 reference in view of the ‘065 reference) fail to establish a *prima facie* case of obviousness. Specifically, Applicant fails to see among the cited reference portions, *inter alia*, a teaching or suggestion of features completely corresponding to the claimed limitations of the detectors being arranged at both sides of a dividing line, extending effectively in a direction perpendicular to the scan line, and features completely corresponding to the claimed limitations of a servo circuit arranged for wobbling the position of the radiation beam in a direction perpendicular to the scan line.

With particular respect to claim 4, Fig. 11, cited as teaching “a divided detector,” is “a view showing a vibration proof structure of a drive motor” (col. 4, lines 49-51; Fig. 11; col. 12, lines 37-57).

With particular respect to claim 5, the cited portion of the ‘552 reference only discloses “to infinitesimally vibrate beam spot with respect to tracks,” but does not appear to indicate a direction for the vibration, nor that the direction is perpendicular to the scan line as claimed.

Additionally with respect to claims 4-5, as set forth above with respect to the § 102(b) rejection, the ‘787 reference fails to teach various claimed features relied upon also in the § 103(a) rejection. Furthermore, no motivation is suggested for making the asserted combination of references. Therefore, because the combination of references do



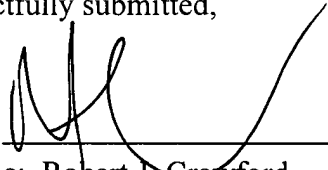
not teach all of the claimed limitations, and there is no motivation for making the asserted combination of references, the Examiner has failed to establish a *prima facie* case of obviousness, and Applicant requests that the § 103(a) rejection of claims 4-5 be removed.

In view of the remarks above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the attorney overseeing the application file, Mr. Eric M. Bram, of Philips Corporation at (914) 333-9635.

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Specification Changes for S/N 09/332,212

Detection system 39 is arranged in the far field of information layer 23, i.e. the detection system is located in a plane where the various diffraction orders of the beam from the information layer are sufficiently separated, in other words, in a plane which is disposed sufficiently far from the image of the information layer formed by objective system 30, 31 and collimator lens 29. Figure 3 [2] shows a plan view of the detection system. The detection system comprises two concentric detectors split along a dividing line 50, giving two inner detectors 51, 52, and two outer detectors 53 and 54. The direction of the dividing line is perpendicular to the effective track direction. The effective track direction is the direction of the track currently being scanned on the record carrier as seen on the detection system through the optics between the detection system and the information layer comprising the track. The diameter of the inner detectors depends on the radius of the spot formed by radiation beam 38 on the detector surface. The diameter is preferably in a range from 50% to 80% of the spot diameter, and more preferably about 70%.

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Claim Changes for S/N 09/332,212

2. (*Amended*) Device according to Claim 1, the detection system comprises four consecutive sub-detectors a, b, c and d in the direction of the scan line, and the signal [representing tangential coma] is proportional to

$$t(a-b) - t(c-d),$$

where $t(n-m)$ is the time difference between detector signals of sub-detectors m and n.

3. (*Amended*) Device according to Claim 1, the detection system comprises four consecutive sub-detectors a, b, c and d in the direction of the scan line, and the signal [representing spherical aberration] is proportional to

$$t(a-b) + t(c-d),$$

where $t(n-m)$ is the time difference between detector signals of sub-detectors m and n.

8. (*Amended*) Device according to Claim 7, wherein the focus signal is proportional to

$$(t_{a1} + t_{d1}) + (t_{a2} + t_{d2}) - (t_{b2} + t_{c2}) - (t_{b1} + t_{c1})$$

where t_e is a time difference between corresponding parts of detector signal e relating to passage of the radiation beam over one of the marks and a reference signal, e designating detector signal label a1, a2, b1, b2, c1, c2, d1 or d2, the detector signals labelled '1' and '2' pertaining to detectors in the outer part and inner part, respectively of a quadrant, the detectors in four subsequent quadrants being labelled 'a', 'b', 'c' and 'd'.

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